

CHAPTER 5

WATER QUALITY PARTNERSHIPS IN THE CANEY FORK RIVER WATERSHED

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5.1. BACKGROUND. The Watershed Approach relies on participation at the federal, state, local and nongovernmental levels to be successful. Two types of partnerships are critical to ensure success:

- Partnerships between agencies
- Partnerships between agencies and landowners

This chapter describes both types of partnerships in the Caney Fork River Watershed. The information presented is provided by the agencies and organizations described.

5.2. FEDERAL PARTNERSHIPS.

5.2.A. Natural Resources Conservation Service. The Natural Resources Conservation Service (NRCS), an agency of the U.S. Department of Agriculture, provides technical assistance, information, and advice to citizens in their efforts to conserve soil, water, plant, animal, and air resources on private lands.

Performance & Results Measurement System (PRMS) is a Web-based database application providing USDA Natural Resources Conservation Service, conservation partners, and the public fast and easy access to accomplishments and progress toward strategies and performance. The PRMS may be viewed at <http://prms.nrcs.usda.gov/prms>. From the opening menu, select "Reports," then select the Conservation Treatment of interest on the page that comes up. Select the desired location and time period from the drop down menus and choose "Refresh." Choose "by HUC" in the "Location" option and choose "Refresh" again.

The data can be used to determine broad distribution trends in service provided to customers by NRCS conservation partnerships. These data do not show sufficient detail to enable evaluation of site-specific conditions (e.g., privately-owned farms and ranches) and are intended to reflect general trends.

CONSERVATION PRACTICE	TOTAL
Comprehensive Nutrient Management Plans (Number)	2
Conservation Buffers (Acres)	142
Erosion Reduction (Tons/Year)	39,626
Inventory and Evaluations (Number)	18
Irrigation Management (Acres)	1
Nutrient Management (Acres)	6,814
Pest Management (Acres)	6,274
Prescribed Grazing (Acres)	2,884
Residue Management (Acres)	375
Tree and Shrub Practices (Acres)	77
Waste Management (Number)	0
Wetlands Created, Restored, or Enhanced (Acres)	5
Wildlife Habitat (Acres)	1,413

Table 5-1. Landowner Conservation Practices in Partnership with NRCS in Caney Fork River Watershed. Data are from PRMS for October 1, 2001 through September 30, 2002 reporting period. More information is provided in Caney Fork-Appendix V.

5.2.B. United States Geological Survey Water Resources Programs – Tennessee District. The U.S. Geological Survey (USGS) provides relevant and objective scientific studies and information for public use to evaluate the quantity, quality, and use of the Nation's water resources. In addition to providing National assessments, the USGS also conducts hydrologic studies in cooperation with numerous Federal, State, and local agencies to address issues of National, regional, and local concern. Please visit <http://water.usgs.gov/> for an overview of the USGS, Water Resources Discipline.

The USGS collects hydrologic data to document current conditions and provide a basis for understanding hydrologic systems and solving hydrologic problems. In Tennessee, the USGS records streamflow continuously at more than 89 gaging stations equipped with recorders and makes instantaneous measurements of streamflow at many other locations. Ground-water levels are monitored Statewide, and the physical, chemical, and biologic characteristics of surface and ground waters are analyzed. USGS activities also include the annual compilation of water-use records and collection of data for National baseline and water-quality networks. National programs conducted by the USGS include the National Atmospheric Deposition Program (<http://bqs.usgs.gov/acidrain/>), National Stream Quality Accounting Network (<http://water.usgs.gov/nasqan/>), and the National Water-Quality Assessment Program (<http://water.usgs.gov/nawqa/>).

USGS Water Resources Information on the Internet. Real-time and historical streamflow, water levels, and water-quality data at sites operated by the Tennessee District can be accessed at <http://waterdata.usgs.gov/tn/nwis/nwis>. Data can be retrieved by county, hydrologic unit code, or major river basin using drop-down menus. Contact Donna Flohr at (615) 837-4730 or dfflohr@usgs.gov for specific information about streamflow data.

Recent publications by the USGS staff in Tennessee can be accessed by visiting <http://tn.water.usgs.gov/pubpg.html>. This web page provides searchable bibliographic information to locate reports and other products about specific areas.

5.2.C. U.S. Fish and Wildlife Service. The mission of the U. S. Fish and Wildlife Service is working with others to conserve, protect, and enhance fish, wildlife, and plants and their habitats for the continuing benefit of the American people. Sustaining our nation's fish and wildlife resources is a task that can be accomplished only through the combined efforts of governments, businesses, and private citizens. The U.S. Fish and Wildlife Service (Service) works with State and Federal agencies and Tribal governments, helps corporate and private landowners conserve habitat, and cooperates with other nations to halt illegal wildlife trade. The Service also administers a Federal Aid program that distributes funds annually to States for fish and wildlife restoration, boating access, hunter education, and related projects across America. The funds come from Federal excise taxes on fishing, hunting, and boating equipment.

Endangered Species Program. Through the Endangered Species Program, the Service consults with other federal agencies concerning their program activities and their effects on endangered and threatened species. Other Service activities under the Endangered Species Program include the listing of rare species under the Endangered Species Act (ESA) of 1973 (87 Stat. 884, as amended: 16 U.S.C. 1531 et seq.) and the recovery of listed species. Once listed, a species is afforded the full range of protections available under the ESA, including prohibitions on killing, harming or otherwise taking a species. In some instances, species listing can be avoided by the development of Candidate Conservation Agreements, which may remove threats facing the candidate species, and funding efforts such as the Private Stewardship Grant Program. For a complete listing of endangered and threatened species in the Caney Fork River watershed, please visit the Service's website at <http://www.cookeville.fws.gov>.

Recovery is the process by which the decline of an endangered or threatened species is stopped and reversed, and threats to the species survival are eliminated, so that long-

term survival in nature can be ensured. The goal of the recovery process is to restore listed species to a point where they are secure and self-sustaining in the wild and can be removed from the endangered species list. Under the ESA, the Service and National Marine Fisheries Service were delegated the responsibility of carrying out the recovery program for all listed species.

In a partnership with the Tennessee Nature Conservancy (TNC), Tennessee Wildlife Resources Agency (TWRA), and Tennessee Department of Environment and Conservation (TDEC) Division of Natural Heritage, the Service is developing a State Conservation Agreement for Cave Dependent Species in Tennessee (SCA). The SCA targets unlisted but rare species and protects these species through a suite of proactive conservation agreements. The goal is to preclude the need to list these species under the ESA. This agreement will cover middle and eastern Tennessee and will benefit water quality in many watersheds within the State.

In an effort to preclude the listing of a rare species, the Service engages in proactive conservation efforts for unlisted species. The program covers not only formal candidates, but other rare species that are under threat. Early intervention preserves management options and minimizes the cost of recovery. Within this watershed, the Service is actively working with landowners to enhance and preserve populations of the Barrens topminnow (*Fundulus julisia*) to help restore this rare fish before it is necessary to list the species as endangered or threatened.

Partners for Fish and Wildlife Program. The U.S. Fish and Wildlife Service established the Partners for Fish and Wildlife Program to restore historic habitat types which benefit native fishes and wildlife. The program adheres to the concept that restoring or enhancing habitats such as wetlands or other unique habitat types will substantially benefit federal trust species on private lands by providing food and cover or other essential needs. Federal trust species include threatened and endangered species, as well as migratory birds (e.g. waterfowl, wading birds, shorebirds, neotropical migratory songbirds).

Participation is voluntary and various types of projects are available. Projects include livestock exclusion fencing, alternate water supply construction, streambank stabilization, restoration of native vegetation, wetland restoration/enhancement, riparian zone reforestation, and restoration of in-stream aquatic habitats.

The Service has completed fourteen projects in the Barren Fork River, Hickory Creek, Witty Creek, Pocahautus Creek, and Duke Creek watersheds that included livestock exclusion fencing around springs and along streambanks, alternate water sources, hardened feeding areas and travel corridors, tree planting, and hardened stream crossings. These projects are designed to enhance the habitat of the Barrens topminnow.

How To Participate.

- Interested landowners contact a “Partners for Fish and Wildlife” Biologist to discuss the proposed project and establish a site visit.
- A visit to the site is then used to determine which activities the landowner desires and how those activities will enhance habitat for trust resources. Technical advice on proposed activities is provided by the Service, as appropriate.
- Proposed cost estimates are discussed by the Service and landowner.

- A detailed proposal which describes the proposed activities is developed by the Service biologist and the landowner. Funds are competitive, therefore the proposal is submitted to the Service's Ecosystem team for ranking and then to the Regional Office for funding.
- After funding is approved, the landowner and the Service co-sign a Wildlife Extension Agreement (minimum 10-year duration).
- Project installation begins.
- When the project is completed, the Service reimburses the landowner after receipts and other documentation are submitted according to the Wildlife Extension Agreement.

For more information regarding the Endangered Species and Partners for Fish and Wildlife programs, please contact the Cookeville Ecological Services Field Office at 931/528-6481 or visit their website at <http://www.cookeville.fws.gov>.

5.2.D. United States Army Corps of Engineers-Nashville District. The geographic boundaries of the Nashville District Corps of Engineers consist of the Cumberland and Tennessee river basins, a combined area of approximately 59,000 square miles. This includes portions of seven states: Tennessee, Kentucky, Alabama, Virginia, Mississippi, Georgia, and North Carolina.

Within the Cumberland River Basin, overall responsibilities for the Nashville District include operation and maintenance of 10 reservoir projects. Each of these is operated for some or all of the following purposes: hydropower production, flood control, navigation, water supply, water quality, fish and wildlife, and recreation.

WATER QUALITY ACTIONS IN THE CANEY FORK RIVER WATERSHED

Water Quality Restoration Initiative for Center Hill Lake and Tailwater. Center Hill Dam is located at Caney Fork River Mile 26.6 in DeKalb County, Tennessee. The impoundment formed by Center Hill Dam extends upstream approximately 64 river miles. The lake's surface area is 18,220 acres at elevation 648.0, which is the top of the power pool. At elevation 648.0, Center Hill Lake averages 73 feet in depth. The project stores potentially damaging floodwaters that can be released gradually once the danger of downstream flooding has passed. The lake is fed mainly by discharges from TVA's Great Falls Dam on the Caney Fork River and by the smaller Falling Water River, as well as numerous minor tributaries. The dam and lake are an integral part of the mature system of Corps of Engineers dams that regulate water within the Cumberland River Basin.

The water quality of Center Hill Lake is affected by several factors. Typical for a deep, southern, storage impoundment, Center Hill Lake develops strong, thermal stratification during the growing season that causes gradual depletion of dissolved oxygen in waters below the surface layer. Dissolved oxygen depletion is exacerbated by oxygen demanding pollutants that enter the lake from the watershed. The watershed has seen increased growth and development within recent years. Nutrient rich inputs cause excessive algal growth in some locations. This can negatively affect lake aesthetics, and when the algae die and decay, dissolved oxygen is consumed, worsening the

normal depletion that occurs with thermal stratification. A trend toward decreasing water quality has been observed by the Corps over the last several years. Improving conditions in the watershed is viewed as essential for reversing this deterioration of water quality.

The lower portion of the Caney Fork River is profoundly affected by water releases from Center Hill Dam. Tailwater conditions are radically different from preimpoundment, natural stream conditions. The tailwater normally experiences daily water level fluctuations, mainly the result of hydropower releases. These fluctuations cause alternate flooding and drying of habitat. The result is reduced quality of habitat for the already limited aquatic biota that can survive in a cold, tailwater environment. The tailwater is considered a coldwater fishery and is routinely stocked with rainbow and brown trout. No continuous minimum flow is provided by the dam. However, unregulated leakage around the dam provides a modest base flow. Occasionally, unfavorable conditions develop in portions of the tailwater when insufficient generation causes water temperatures to rise above 20°C. This temperature is considered the upper limit for favorable trout growth. In addition to the physical impacts, depressed oxygen levels in the hydropower releases negatively affects the tailwater. Depressed oxygen concentrations in hydropower releases cause frequent violations of the state's 6.0 mg/l standard for coldwater fisheries.

Restoration Initiatives. The Nashville District is performing a Feasibility Study for an aquatic ecosystem restoration project at Burgess Falls State Natural Area (SNA) on Falling Water River. The SNA is located immediately upstream from the backwaters of Center Hill Lake. Falling Water River drains the rapidly developing Cookeville-Putnam County area. Anticipated project features include stabilization of the existing Burgess Falls Dam to extend its function as a sediment control point. The dam has trapped extensive sediment deposits over time, so that the lake has been much reduced in volume and depth. Portions of the lake are developing wetland plant communities. The Corps is investigating a range of alternatives in the lake to promote additional development of desirable wetland plants and improve nutrient and sediment trapping efficiency of the lake. The in-lake alternatives are intended to improve aquatic habitat within and downstream from the lake and are linked to being able to cost-effectively stabilize the existing dam.

Efforts have been completed and other measures are being studied or planned to improve water quality conditions and physical habitat in the Caney Fork River downstream from Center Hill Dam. Turbine venting was evaluated at Center Hill as a means to ameliorate low dissolved oxygen conditions in the discharge. Turbine venting involves a combination of providing supplemental air supplies and installation of hub baffles. Beginning in 1998, one unit was modified and after an appropriate period of time an evaluation was made of the experiment. The evaluation revealed turbine venting to be successful, at least as an interim measure to improve oxygen levels in hydropower releases. The remaining two units at Center Hill have now been modified in a similar fashion.

The long-term solution to dissolved oxygen restoration at Center Hill Dam is replacement of the 50 plus year old units with auto-venting turbines. A study is underway to document the effects of the proposed rehabilitation. Auto-venting turbines have the advantage of greatly improving dissolved oxygen conditions during times when augmentation is needed, without the loss of hydropower generating efficiency caused by

hub baffles. Once the study is completed, funding will be sought to carry out replacement of the units.

In order to improve physical habitat conditions downstream from Center Hill Dam, the rehab study will also evaluate means to provide continuous minimum flow. Modeling is being performed to examine the impact of various plans to provide continuous minimum flow. One option to provide such flow is rehabilitation and operation of the small, house generator unit at the dam.

Pulsing of turbines to increase the tailwater area that remains wetted, and thus improve benthic habitat, has undergone some field testing and analysis. A pulsing study was conducted during November 2002 using volunteers from local fishing clubs. This study brought forth valuable information and improved the working relationships between the Corps and fishermen who use the tailwater.

Other Actions. Discharges from TVA's Great Falls Dam are the largest source of water flowing into Center Hill Lake. During 2002, the Nashville District Corps of Engineers began routine collection of water quality data from major inflows (Caney Fork River, Collins River, etc.) to Great Falls Lake. Definition of inflow water characteristics to Great Falls Lake is important to understanding processes that occur in that impoundment and ultimately provides a better understanding of processes in Center Hill Lake.

Cooperation with the Tennessee Department of Environment and Conservation, Division of Water Pollution Control

The Nashville District Corps of Engineers collects a significant volume of physical, chemical, and biological water quality data every year. These data are collected at representative points both within the lake, on various major inflow streams, and in the tailwater. The data are used to help determine watershed water quality trends and to provide for better management of the lake and tailwater. These data are provided to the TDEC, Division of Water Pollution Control to assist the watershed management program. The water quality data provided by the Corps helps fill in gaps in the water quality record for area water bodies. Often Corps water quality data is the only information available that is collected on a systematic basis for the Corps Cumberland River Basin lakes and reservoirs.

Environmental Education. Environmental education opportunities are provided to area school age children by the Nashville District Corps of Engineers. Water Quality personnel have participated in environmental awareness programs for the past several years at Center Hill Lake. These programs are organized by the Resource Management staff and involve various area schools. The programs provided allow students to have a "hands on" experience in water quality surveillance techniques. Typically the programs include an interactive discussion of overall water quality issues. This is supplemented with demonstrations of sophisticated water quality instrumentation, collection and analysis of biological specimens from local aquatic environments, and viewing of reference materials and preserved specimens. The value of such environmental education is enormous, because it reaches young people early in their lives and exposes them to a scientific learning experience that is impossible to duplicate in a formal classroom. This experience hopefully contributes to a greater lifelong awareness by the individual of the importance of conserving and improving water quality and wise use of water resources.

Additional information concerning projects, programs, and activities of the Nashville District Corps of Engineers can be obtained on the World Wide Web at <http://www.lrn.usace.army.mil/>

5.3. STATE PARTNERSHIPS.

5.3.A. TDEC Division of Water Supply. The Source Water Protection Program, authorized by the 1996 Amendments to the Safe Drinking Water Act, outline a comprehensive plan to achieve maximum public health protection. According to the plan, it is essential that every community take these six steps:

- 1) Delineate the drinking water source protection area
- 2) Inventory known and potential sources of contamination within these areas
- 3) Determine the susceptibility of the water supply system to these contaminants
- 4) Notify and involve the public about threats identified in the contaminant source inventory and what they mean to their public water system
- 5) Implement management measures to prevent, reduce or eliminate threats
- 6) Develop contingency planning strategies to deal with water supply contamination or service interruption emergencies (including natural disaster or terrorist activities).

Source water protection has a simple objective: to prevent the pollution of the lakes, rivers, streams, and ground water (wells and springs) that serve as sources of drinking water before they become contaminated. This objective requires locating and addressing potential sources of contamination to these water supplies. There is a growing recognition that effective drinking water system management includes addressing the quality and protection of the water sources.

Source Water Protection has a significant link with the Watershed Management Program goals, objectives and management strategies. Watershed Management looks at the health of the watershed as a whole in areas of discharge permitting, monitoring and protection. That same protection is important to protecting drinking water as well. Communication and coordination with a multitude of agencies is the most critical factor in the success of both Watershed Management and Source Water Protection.

Watershed management plays a role in the protection of both ground water and surface water systems. Watershed Management is particularly important in areas with karst limestone characterized by solution features such as caves and sinkholes as well as disappearing streams and spring} since the differentiation between ground water and surface water is sometimes nearly impossible. What is surface water can become ground water in the distance of a few feet and vice versa.

Source water protection is not a new concept, but an expansion of existing wellhead protection measures for public water systems relying on ground water to now include surface water. This approach became a national priority, backed by federal funding, when the Safe Drinking Water Act amendments (SDWA) of 1996 were enacted. Under

this Act, every public drinking water system in the country is scheduled to receive an assessment of both the sources of potential contamination to its water source of the threat these sources may pose by the year 2003 (extensions are available until 2004). The assessments are intended to enhance the protection of drinking water supplies within existing programs at the federal, state and local levels. Source water assessments were mandated and funded by Congress. Source water protection will be left up to the individual states and local governments without additional authority from Congress for that progression.

As a part of the Source Water Assessment Program, public water systems are evaluated for their susceptibility to contamination. These individual source water assessments with susceptibility analyses are available to the public at <http://www.state.tn.us/environment/dws> as well as other information regarding the Source Water Assessment Program and public water systems.

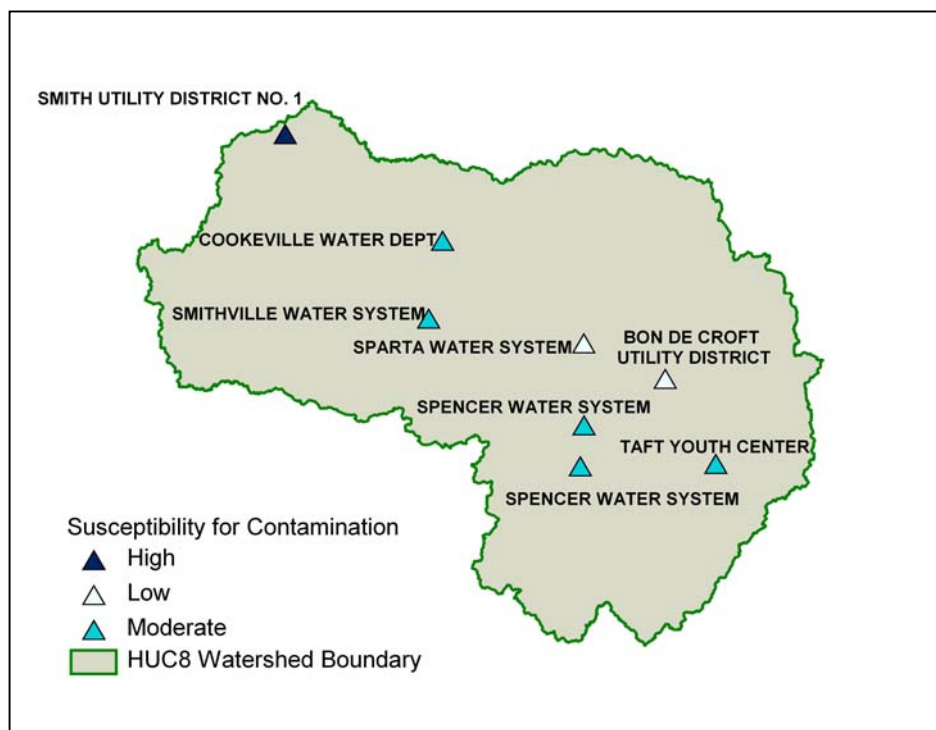


Figure 5-1. Susceptibility for Contamination in the Caney Fork River Watershed.

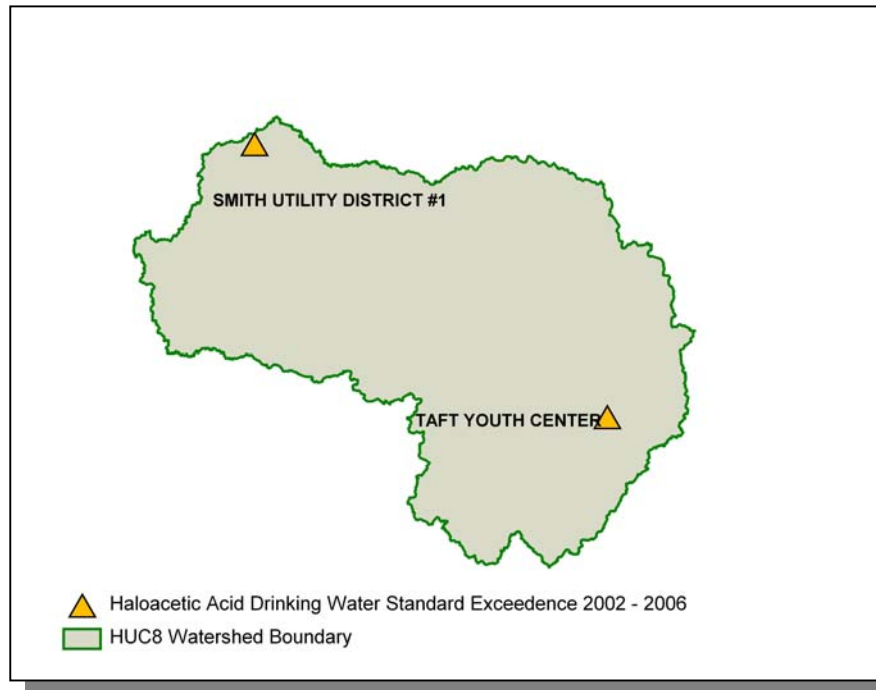


Figure 5-2. Exceedences of the Haloacetic Acid Drinking Water Standard in the Caney Fork River Watershed.

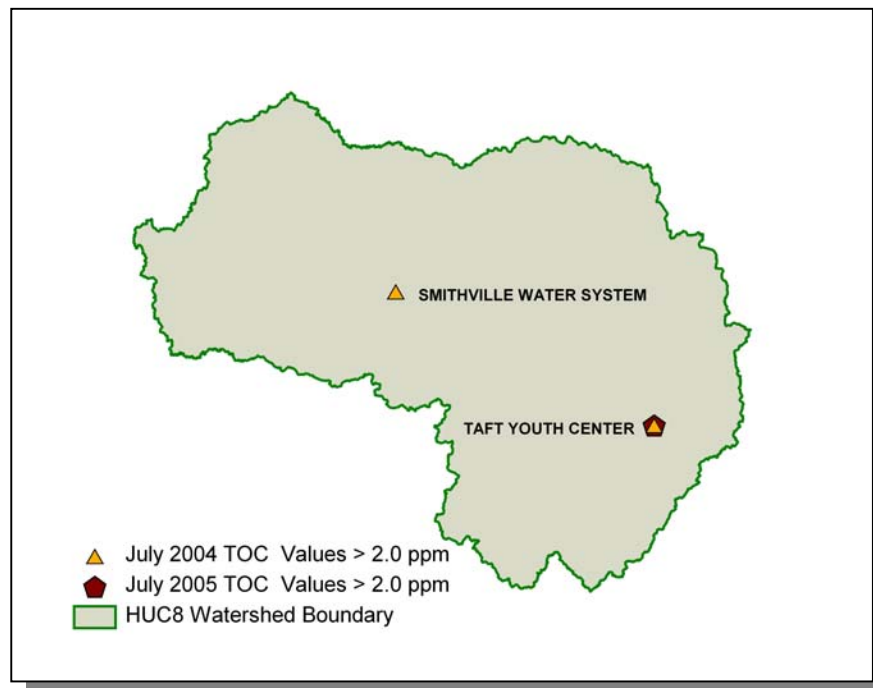


Figure 5-3. July 2004 and 2005 Raw Water Total Organic Carbon (TOC) Analysis in the Caney Fork River Watershed.

For further discussion on ground water issues in Tennessee, the reader is referred to the Ground Water Section of the 305(b) Water Quality Report at <http://www.tdec.net/water.shtml>.

5.3.B. State Revolving Fund. TDEC administers the state's Clean Water State Revolving Fund Program. Amendment of the Federal Clean Water Act in 1987 created the Clean Water State Revolving Fund (SRF) Program to provide low-interest loans to cities, counties, and utility districts for the planning, design, and construction of wastewater facilities. The U.S. Environmental Protection Agency awards annual capitalization grants to fund the program and the State of Tennessee provides a twenty-percent funding match. TDEC has awarded loans totaling approximately \$550 million since the creation of the SRF Program. SRF loan repayments are returned to the program and used to fund future SRF loans.

SRF loans are available for planning, design, and construction of wastewater facilities, or any combination thereof. Eligible projects include new construction or upgrading/expansion of existing facilities, including wastewater treatment plants, pump stations, force mains, collector sewers, interceptors, elimination of combined sewer overflows, and nonpoint source pollution remedies.

SRF loan applicants must pledge security for loan repayment, agree to adjust user rates as needed to cover debt service and fund depreciation, and maintain financial records that follow governmental accounting standards. SRF loan interest rates range from zero percent to market rate, depending on the community's per-capita income, taxable sales, and taxable property values. Most SRF loan recipients qualify for interest rates between 2 and 4 percent. Interest rates are fixed for the life of the term of the loan. The maximum loan term is 20 years or the design life of the proposed wastewater facility, whichever is shorter.

TDEC maintains a Priority Ranking System and Priority List for funding the planning, design, and construction of wastewater facilities. The Priority Ranking List forms the basis for funding eligibility determinations and allocation of Clean Water SRF loans. Each project's priority rank is generated from specific priority ranking criteria and the proposed project is then placed on the Project Priority List. Only projects identified on the Project Priority List may be eligible for SRF loans. The process of being placed on the Project Priority List must be initiated by a written request from the potential SRF loan recipient or their engineering consultant. SRF loans are awarded to the highest priority projects that have met SRF technical, financial, and administrative requirements and are ready to proceed.

Since SRF loans include federal funds, each project requires development of a Facilities Plan, an environmental review, opportunities for minority and women business participation, a State-approved sewer use ordinance and Plan of Operation, and interim construction inspections.

For further information about Tennessee's Clean Water SRF Loan Program, call (615) 532-0445 or visit their Web site at <http://www.tdec.net/srf>.

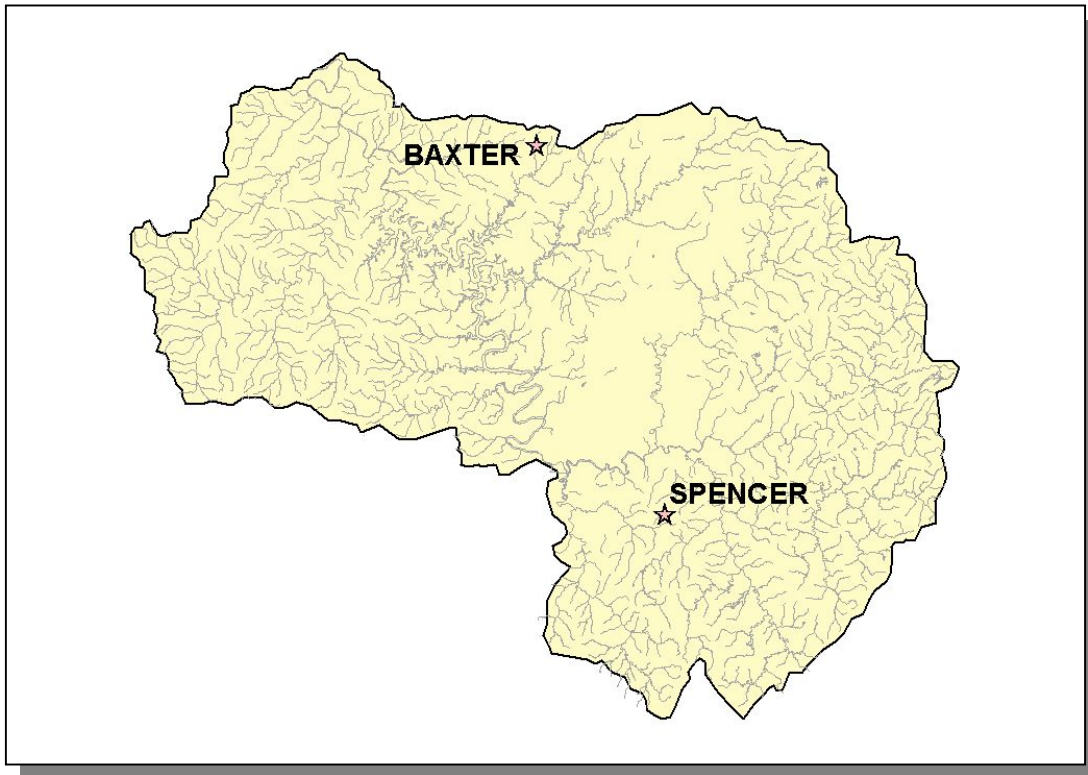


Figure 5-4. Location of Communities Receiving SRF Loans or Grants in the Caney Fork River Watershed. More information is provided in Caney Fork-Appendix V.

5.3.C. Tennessee Department of Agriculture. The Tennessee Department of Agriculture's Water Resources Section consists of the federal Section 319 Nonpoint Source Program and the Agricultural Resources Conservation Fund Program. Both of these are grant programs which award funds to various agencies, non-profit organizations, and universities that undertake projects to improve the quality of Tennessee's waters and/or educate citizens about the many problems and solutions to water pollution. Both programs fund projects associated with what is commonly known as "nonpoint source pollution."

The Tennessee Department of Agriculture's Nonpoint Source Program (TDA-NPS) has the responsibility for management of the federal Nonpoint Source Program, funded by the US Environmental Protection Agency through the authority of Section 319 of the Clean Water Act. This program was created in 1987 as part of the reauthorization of the Clean Water Act, and it established funding for states, territories and Indian tribes to address NPS pollution. Nonpoint source funding is used for installing Best Management Practices (BMPs) to stop known sources of NPS pollution, training, education, demonstrations and water quality monitoring. The TDA-NPS Program is a non-regulatory program, promoting voluntary, incentive-based solutions to NPS problems. The TDA-NPS Program basically funds three types of programs:

- **BMP Implementation Projects.** These projects aid in the improvement of an impaired waterbody, or prevent a non-impaired water from becoming listed on the 303(d) List.
- **Monitoring Projects.** Up to 20% of the available grant funds are used to assist the water quality monitoring efforts in Tennessee streams, both in the state's 5-year watershed monitoring program, and also in performing before-and-after BMP installation, so that water quality improvements can be verified. Some monitoring in the Caney Fork River Watershed was funded under an agreement with the Tennessee Department of Agriculture, Nonpoint Source Program, and the U.S. Environmental Protection Agency Assistance Agreements C9994674-99-0, C9994674-00-0, and C9994674-01-0.
- **Educational Projects.** The intent of educational projects funded through TDA-NPS is to raise the awareness of landowners and other citizens about practical actions that can be taken to eliminate nonpoint sources of pollution to the waters of Tennessee.

The Tennessee Department of Agriculture Agricultural Resources Conservation Fund Program (TDA-ARCF) provides cost-share assistance to landowners across Tennessee to install BMPs that eliminate agricultural nonpoint source pollution. This assistance is provided through Soil Conservation Districts, Resource Conservation and Development Districts, Watershed Districts, universities, and other groups. Additionally, a portion of the TDA-ARCF is used to implement information and education projects statewide, with the focus on landowners, producers, and managers of Tennessee farms and forests.

Participating contractors in the program are encouraged to develop a watershed emphasis for their individual areas of responsibility, focusing on waters listed on the Tennessee 303(d) List as being impaired by agriculture. Current guidelines for the TDA-ARCF are available. Landowners can receive up to 75% of the cost of the BMP as a reimbursement.

Since January of 1999, the Department of Agriculture and the Department of Environment and Conservation have had a Memorandum of Agreement whereby complaints received by TDEC concerning agriculture or silviculture projects would be forwarded to TDA for investigation and possible correction. Should TDA be unable to obtain correction, they would assist TDEC in the enforcement against the violator. More information about the joint policy to address Bad Actors in forestry operations is available at <http://www.state.tn.us/environment/news/release/jan99/badact.htm>

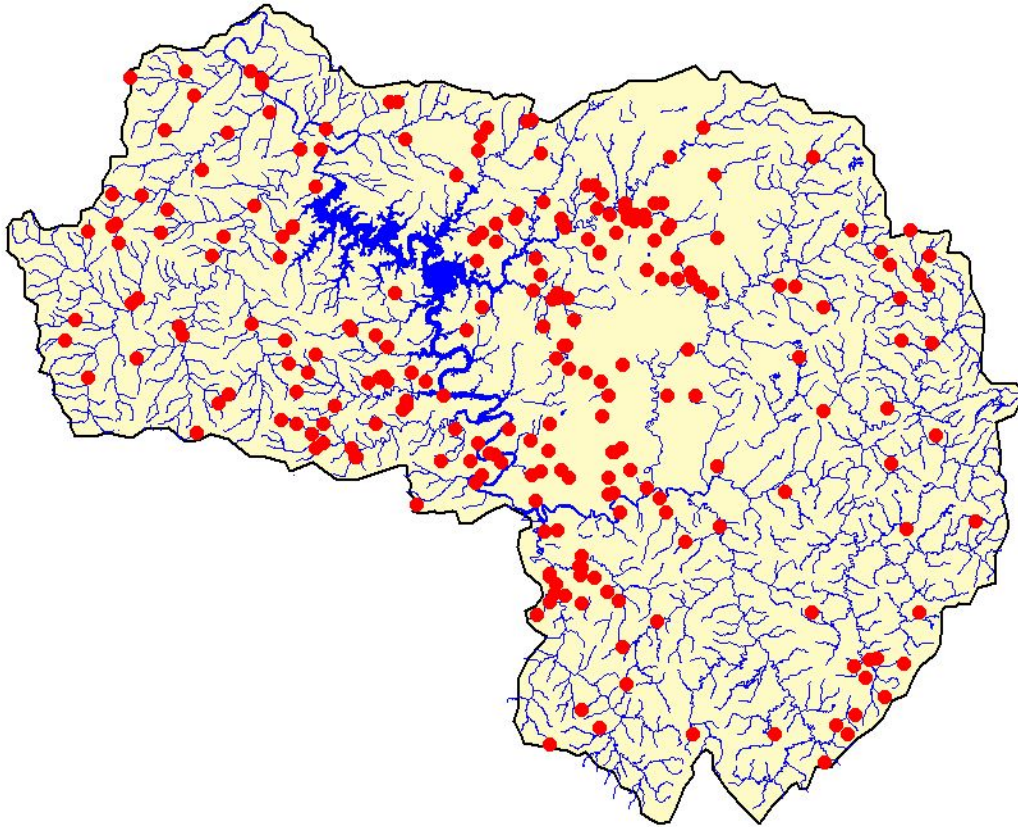


Figure 5-5. Location of BMPs installed from 1999 through 2002 in the Caney Fork River Watershed with Financial Assistance from the Tennessee Department of Agriculture's Nonpoint Source and Agricultural Resources Conservation Fund Grant Programs.

5.4. LOCAL INITIATIVES.

5.4.A. Cumberland River Compact. The Cumberland River Compact is a not-for-profit educational organization with a mission to: *enhance the water quality of the Cumberland River and its tributaries through education and by promoting cooperation among citizens, businesses, and agencies in Kentucky and Tennessee.*

The Cumberland River, 696 miles long, with a watershed that encompasses almost 18,000 square miles and a stakeholder population of nearly two million, has provided the challenge of setting specific goals and utilizing an organized approach to have an effect on the river. With grants from TDEC and the Tennessee Department of Agriculture 319 program, the Compact started reaching out to the 14 separate watersheds that make up the Cumberland Basin – one at a time in conjunction with Tennessee's five-year watershed management cycle. A series of stakeholder meetings have been completed in the Harpeth River and the Red River Watersheds. Stakeholders in both watersheds formed their own organization and continue to work with the Compact and on their own on neighborhood workshops, river clean-ups, water quality testing, and visual assessments, and have gotten involved with local planning and zoning. They also send a member to the Compact Board meetings and Water Quality Advisory Committees to insure ongoing communication and partnering. The Compact is currently working in the third watershed, the Middle Cumberland (a.k.a. Lower Cumberland), and these stakeholder meetings will continue until spring of 2003. Similar stakeholder meetings in the Caney Fork River and Collins River watersheds will occur in the next few years.

With the goal to educate and promote cooperation among citizens, businesses and agencies the following programs have been established:

Splash Bash Teacher Training and Festival. This is a combination teaching and celebration program for the river. The Compact brings professionals who work in the field of water quality to teach teachers, and therefore their students, how to perform simple chemical testing, macro-invertebrate identification and learn watershed mapping. Each class adopts a local creek for the purpose of analyzing its health. After each classroom collects their data they come together for a day of exhibiting their data and having fun.

Marina Education Program. This program targets marina owners and boarders to get them involved personally in the river's health. The first project completed was a series of signs reading: "You are in the Cumberland River Watershed – Don't Pollute the Boot." Each of the member marinas proudly display their signs at their pump docks and offices. Currently, this program is heading up the "Catfish Out of Water City Art Festival." Partnering with Greenways for Nashville and the Parthenon Patrons, the Compact hopes to raise awareness-through public art- about the value of the Cumberland River to our quality of life and the land management tools, such as greenways, which can protect and enhance this natural resource. Recognizing the value of the educational possibilities with Catfish Out of Water, a number of partners (Austin Peay State University, Metro Greenways, Metro Water, Middle Tennessee State University, the Parthenon and Warner Parks) have joined together to 1) work with Metro Water and water departments of surrounding communities to bring a storm drain labeling program to the watershed, 2) create and distribute "A Catfish Lives Here" booklet for grades 4-8 to teach children

about non-point source pollution and the effect it has on catfish, 3) expand the Warner Parks Junior Naturalist Program throughout local school systems featuring the Catfish Out of Water patch, and 4) provide activities about water quality through interactive placemats in local restaurants. Funding is made possible through a grant from the Department of Agriculture's Nonpoint Source Program.

Land Education Program. Educating "strange bedfellows" through annual programs, the first workshop put on by the Land Committee was a *Conservation Easement Conference*. The Compact brought Stephen Small, the Boston attorney who wrote most of the IRS Codes on the subject of conservation easements, to speak with attorneys, CPA's, appraisers, as well as local landowners on the subject of protecting land through these means. The second conference in 2002 was *Conservation and Common Sense Development – A Workshop for Building Better Communities*, co-hosted by the Tennessee River Eastbank Group, The Tennessee Homebuilders, The Tennessee Farm Bureau, the Compact, and others. This conference started the conversation between developers, the government agencies who permit them, and the citizens who live in their communities on better site design approaches to show "the bottom line of green is black." The third conference is in the early planning stages; however, the topic will focus on new technologies to building ecologically-friendly homes, buildings, and neighborhoods.

Water Quality Advisory Committee. This committee is responsible for seeing that our technical information is beyond reproach. The committee has members who represent: the Kentucky Division of Water, the Natural Resource Conservation Service, Greater Nashville Regional Council, the Tennessee Department of Agriculture's Nonpoint Source Program, CTE Engineers, TDEC Division of Water Pollution Control, U.S. Army Corps Of Engineers, Nashville Public Works, Nashville Metropolitan Water Services, the United States Geologic Survey, and the Tennessee Wildlife Resource Agency. The two most outstanding products to come out of this Committee to date are the award-winning *Harpeth River Watershed Brochure* (a simple brochure/map of that watershed which answers two questions through the use of government data – Where can I swim? Where can I fish?) and the *Harpeth River Sediment Study Plan*. The Sediment Study Plan follows the Splash Bash Teacher Training in our outreach to each watershed. This project uses local volunteers to measure the sediment being carried through the streams of a particular watershed. Since silt is one of the leading pollutants to all southeastern rivers but is seldom tested by government agencies, this work is important not only to local citizens, businesses, and wildlife but also to our governmental partners who have given this project their stamp of approval. The Cumberland River Compact was chosen by the Southeast Watershed Forum as *The Tennessee Success Story for the Year* – for the production of the *Harpeth River Watershed Map – An Overview of Our Water Quality*. A Red River Watershed Map is now in progress.

For additional information, contact:

Margo Farnsworth
Executive Director
Cumberland River Compact
P. O. Box 41721
Nashville, TN 37204
(615)837-1151 or email: screendoor@bigfoot.com
<http://www.cumberlandrivercompact.org>